CLAIMS

1. An optical condenser device comprising:

a first light source;

a second light source; and

a first optical combiner for combining beams from the first light source with beams from the second light source,

the first light source having a first semiconductor laser array stack in which a plurality of semiconductor laser arrays, each having a plurality of active layers aligned in parallel in a first direction, are stacked in a direction perpendicular to the first direction, a first collimator lens for collimating a plurality of beams in a plane perpendicular to the first direction, which beams are emitted from the plurality of active layers, and a first beam converter for receiving the beams collimated by the first collimator lens to rotate the transverse section of each beam by substantially 90°,

the second light source having a second semiconductor laser array stack in which a plurality of semiconductor laser arrays, each having a plurality of active layers aligned in parallel in a second direction, are stacked in a direction perpendicular to the second direction, a second collimator lens for collimating a plurality of beams in a plane perpendicular to the

second direction, which beams emitted from the plurality of active layers, and a second beam converter for receiving the beams collimated by the second collimator lens to rotate the transverse section of each beam by substantially 90°, and

the first optical combiner having one or more transmitting portions for receiving and transmitting the beams emitted from the first beam converter and one or more reflecting portions for receiving and reflecting the beams emitted from the second beam converter to combine the beams transmitted through the transmitting portions with the beams reflected by the reflecting portions.

2. The optical condenser device according to Claim 1, wherein

the transmitting portions and the reflecting portions of the first optical combiner both have strip-like shapes elongated in the direction of stacking of the laser arrays, and

the first optical combiner is a flat plate having the transmitting portions and the reflecting portions positioned alternately.

3. The optical condenser device according to Claim 2, wherein

the first optical combiner is inclined at an angle of 45° with respect to the central axes of both

the beams emitted from the active layers of the first light source and the beams emitted from the active layers of the second light source,

the front surface of the first optical combiner opposes the first light source, and

the back surface of the first optical combiner opposes the second light source.

4. The optical condenser device according to any of Claims 1 to 3, further comprising a third light source and a second optical combiner,

the third light source having a third semiconductor laser array stack in which a plurality of semiconductor laser arrays, each having a plurality of active layers aligned in parallel in a third direction, are stacked in a direction perpendicular to the third direction, a third collimator lens for collimating a plurality of beams in a plane perpendicular to the third direction, which beams are emitted from the plurality of active layers, and a third beam converter for receiving the beams collimated by the third collimator lens to rotate the transverse section of each beam by substantially 90°, and

the second optical combiner having one or more transmitting portions for receiving and transmitting the beams combined by the first optical combiner and one or more reflecting portions for receiving and

reflecting the beams emitted from the third beam converter to combine the beams transmitted through the transmitting portions with the beams reflected by the reflecting portions.

5. The optical condenser device according to any of Claims 1 to 3, further comprising a third light source and a second optical combiner,

the third light source having a third semiconductor laser array stack in which a plurality of semiconductor laser arrays, each having a plurality of active layers aligned in parallel in a third direction, are stacked in a direction perpendicular to the third direction, a third collimator lens for collimating a plurality of beams in a plane perpendicular to the third direction, which beams are emitted from the plurality of active layers, and a third beam converter for receiving the beams collimated by the third collimator lens to rotate the transverse section of each beam by substantially 90°, and

the second optical combiner having one or more transmitting portions for receiving and transmitting the beams emitted from the third beam converters and one or more reflecting portions for receiving and reflecting the beams combined by the first optical combiner to combine the beams transmitted through the transmitting portions with the beams reflected by the

reflecting portions.

6. The optical condenser device according to Claim 4 or 5, wherein

the transmitting portions and the reflecting portions of the second optical combiner both have strip-like shapes elongated in the direction of stacking of the semiconductor laser arrays, and

the second optical combiner is a flat plate having the transmitting portions and the reflecting portions positioned alternately.

7. The optical condenser device according to Claim 6, wherein

the second optical combiner is inclined at an angle of 45° with respect to the central axes of the beams combined by the first optical combiner and the beams emitted from the active layers of the third light source,

the front surface of the second optical combiner opposes the first optical combiner, and

the back surface of the second optical combiner opposes the third light source.